Nelson (W.)

COMPLIMENTS OF THE AUTHOR.

Yellow Fever

A New Treatment.

A Forecast for 1889.

"No reason without language.
No language without reason."

NEW YORK:
1889

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ERRATA.

In Contents—for "18 7," read 1887.
In Contents—for "emperil," read imperil.
In Preface—for "prophylatic," read prophylactic.
Page 11—for "head," read hand.
Page 14—for "new corners," read new comers.
Page 15—for "oxygen carries," read oxygen-carriers.
Page 19—suppress "and," in "and was that of the 'Old School.'"
Page 23—for "of its skin," read of the skin.
Page 25—for "1884," read 1883
Page 26—for "Enclyclopedia," read Encyclopedia.
Page 28—for "cannot be expected," read cannot cause surprise.
Page 32—for "Janerio," read Janeiro.
Page 38—for "July," read May.
Page 39—for "July," read May.
Page 39—for "she did quarantine against Cuba," read she quarantines against Cuba.

YELLOW FEVER

A NEW TREATMENT.

A FORECAST FOR 1889.

PANAMA, COLON AND HAVANA. ITS HOT-BEDS AND DISTRIBUTERS.

"No reason without language.
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NEW YORK
1889

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CONTENTS.

	PAGE.
Preface - - - - - - - - - -	3 to 6
Inoculation as a prophylactic in yellow fever - -	3
Inoculation—its efficacy proven - - - - -	3
Letter to *Times-Union* of Nov. 28, 18 7, forecasting epidemic of 1888 - - - - - -	7 to 9
Paper read before State Medical Society of Arkansas, Pine Bluff Meeting, May 28, 1889 - -	9 to 33
Addenda, including a brief history of the Florida epidemics of 1887 and 1888, Yellow Fever, its hot-beds and distributers; the Dr. Joseph Holt Quarantine, or "Maritime Sanitation;" shall Cuba and the Isthmus of Panama constantly emperil the United States? - - - - - -	33 to 40

PREFACE.

Yesterday I received a long letter from my valued correspondent and friend, Dr. Domingos Freire, Professor of Organic Chemistry and Biology in the Faculty of Medicine at Rio de Janeiro, Brazil. He wrote under date of May 5, giving me information regarding the epidemic of yellow fever that has just swept Rio de Janeiro and vicinity. There were fully four thousand deaths. He had been more than busy. His inoculations as a prophylatic against the disease had given some truly remarkable results. The death rate among the several thousands inoculated by him since 1885, had been less than one per cent., the exact figure being .07. When this is contrasted with the mortality in seasons of epidemic of sixty to seventy-five per cent., no explanation is necessary. My readers must bear in mind that Dr. Domingos Freire has been perfecting his methods from year to year. He has been obliged to find it out for himself. Now, almost perfect methods obtain; with them higher results must follow. In common with Drs. Freire, Girerd, Findlay and Delgado, I am a firm believer in the absolute protection afforded by such inoculations, and I patiently await a time when the world will give Dr. Domingos Freire—the father of these investigations—the credit that is his.

Time and again I have been asked for a forecast for the Sunny South, for the summer of 1889. To my plain way of

thinking, the outlook for the summer and fall of 1889 is not cheerful. Why, say you? Simply because the germs of the disease again have hibernated successfully, as proven by the case of yellow fever reported at Sanford, Florida, some weeks ago. Again, the papers refer to a suspicious case near Manatee, Florida. The germs are there—merely quiescent, quite ready to take on activity when the long, hot, dry season favors their propagation.

Another factor in this connection. The past winter has been a remarkable one, not only in the United States, but at home, in the Province of Quebec. It is over half a century since a winter like the past has been known in Lower Canada. The mildness of the winter has been phenomenal. In a word, a condition favorable to the germs of yellow fever. The frosts of the past winter in Florida practically have been *nil*, Tampa and that section being below the frost line. The unusual winter has been followed by an unusual spring. Quite recently I spent some six weeks in Southwestern Texas, where there has been an exceptionally early development of malarial diseases.

In Cuba the season is reported dry—want of rain and drouth, particularly in the Havana section. In the City of Havana from fifteen to twenty cases of yellow fever are reported weekly, and that, mark you, with the epidemic season—August and September—two months off. In that city (a perpetual hot-bed of the disease), where it is found every month in the year, the germs only take on their greatest activity in August and September, when, if the food for all epidemics be present—newcomers—it sweeps them away like chaff before the wind. When the hot, dry season is on, let Florida look to

herself, and bear in mind the experience of Memphis, where the disease appeared about September 15, 1878, to sweep it, and its re-appearance about July 15, 1879.

I am wholly at loss to understand how anyone - even the merest tyro in yellow fever—can expect Florida to escape this year. Are we, as earnest, truthful men, to expect the disease to make an exception of Florida? I deem that fair State infected, and when the right atmospheric conditions return—if not earlier—that the disease will be true to its history, extending over four centuries, and re-appear.

Under Governor Fleming some excellent legislation has been effected. I am indebted to him for a copy of the bill, and have read it carefully. Under it, with men and money, the disease can be seized in its very incipiency, and, let us trust, be quarantined.

Let the Health Authorities of the South be on the alert. Eternal vigilance may be the price of safety.

WOLFRED NELSON.

Little Rock, Ark., June 6, 1889.

P. O. address, No. 32 Nassau Street, New York City, N. Y.

[Times-Union, Jacksonville, Nov. 30, 1887.]

YELLOW FEVER AT TAMPA—SOME PERTINENT TESTIMONY FROM A DISINTERESTED SOURCE.

TAMPA, FLORIDA, Nov. 28, 1887.

To the Editor of the Times-Union:

DEAR SIR: To me it seems superfluous to express any opinion on the many cases of yellow fever that have appeared in this city and vicinity, particularly when practitioners of known excellence, experience and truthfulness have diagnosed it as yellow fever. I refer to Dr. John P. Wall of this city, Dr. Joseph Y. Porter, President of the Board of Health of Key West, formerly United States Army, now here in charge of the yellow fever hospital. My sole reason for thrusting my views before the people of Florida is as follows:

The diagnosis of the gentlemen named has been called in question by men of no recognized professional status, whose published views are either based upon ignorance or worse, views that may cause foolish people to fancy themselves safe when the death rate up to this date has been 17 per cent., and the future has yet to unfold itself.

Thanks to Drs. Wall and Porter, I have had every facility granted me for seeing existing cases and convalescents, both in private practice and in the yellow fever hospital, so ably presided over by Dr. Porter. I have made my own inquiries, have asked my own questions and examined patients one by one. All the facts connected with the epidemic have been placed be-

fore me. Its origin can be clearly traced to a schooner engaged in smuggling.

As a close student, thinker and writer upon this subject I have no hesitation in pronouncing the disease yellow fever, properly so called.

In this matter I have no interest to serve except that of exact justice to my confreres and scientific truth, and finally the greatest good to the greatest number. Being a foreigner (a British subject), and a non-resident I have no bias or interest to influence me.

As a stranger to you, Mr. Editor, it may be well for me to state that I am known to Drs. Daniels and Fernandez of your city and well known to Dr. Neill Mitchell, President of the Jacksonville Board of Health.

Let the people of this fair State be true to their best interests and wake to instant action; in a word, prepare for what assuredly awaits them next summer.

I have the honor to remain

Your obedient servant,

WOLFRED NELSON, C. M., M. D.,

Late Board of Health, State Panama, S. A.

YELLOW FEVER.

BEING A PAPER READ BEFORE THE STATE MEDICAL SOCIETY OF ARKANSAS, PINE BLUFF MEETING, MAY 28, 1889.

By WOLFRED NELSON, C. M., M. D., Member of the College of Physicians and Surgeons, Province of Quebec, Canada; late State Board of Health, Panama, South America, etc.

Mr. President and Gentlemen:

With your kind permission I shall read a brief paper on yellow fever, a theme at once interesting to all students of medicine, and presumably of marked interest to my *confreres* in the "Sunny South."

In what follows I shall refer to my own experience of this dread disease at Panama on the Pacific, Colon on the Atlantic, both ports of the Isthmus of Panama. My studies and observations on the West Coast of Mexico, where I studied and traced its epidemics of 1883 and 1884. My experience in the hospitals of Cuba, and finally my visit to Florida, in the fall of 1887, when I deliberately forecast the epidemic that swept Jacksonville in 1888. My letter of warning to the people of Florida, was published in the *Times-Union*, of Jacksonville, November 30, 1887, and was recalled *when the disease was upon them.*

Now, to return to the Isthmus of Panama, where I lived and practiced from 1880 to 1885. I was back there twice in 1886 and twice in 1888, thus, to use an expressive phrase, bringing my knowledge down to date.

The yellow fever of the Isthmus of Panama I describe thus: It is an acute infectious disease, a specific fever, ordinarily not contagious, but under certain atmospheric conditions, not yet fully explained, the disease undoubtedly develops contagious properties and epidemics result.

Yellow fever is ushered in, in a variety of ways. It may be preceded by languor or malaise. The invasion may be abrupt. Generally characterized by a chill, often very severe, lasting one, two or three hours; the duration of the chill having a marked significance, severe chills marking nearly all fatal cases. Again the disease may be ushered in by sudden nausea and faintness, without any warning, as in my own case during the Isthmian epidemic of 1880. Headache is always met with. I know of no exception to this statement. Frontal headache, a flushed face and gastric irritability in newcomers within the yellow fever zone is always very suspicious, a fact specially referred to in Dr. Belot's admirable book, *La Fievre Jaune a la Havane*. Generally the headache is frontal; it may be bi-parietal and occasionally occipito-frontal, but, to repeat, marked headache always. In dealing with specific yellow fever of the Isthmus of Panama—of which, if respectability depends on its antiquity, is the oldest, most respectable and fatal variety known—a history of constipation obtains in nearly all cases. I can recall but a single case as an exception to this well-known rule, and it was a case in my practice where the disease had been preceded by a malarial diarrhœa.

No condition of health gives immunity. It aims at all, be they healthy or unhealthy. It has a specific role. From early youth to advanced age it pursues its death-dealing mission. It is true that the mortality among children is less than at puberty and beyond. Pains in the legs and sacral region, the latter often intense and agonizing. I shall never forget my own experience. It seemed as if a legion of fiends were trying to dig out—if I may use the expression—my sacrum with red-hot pincers. The pain is excruciating and indescribable. In the majority of patients, the face was red, just like the face in scarlet fever—the boiled lobster color. The eyes at first were clear, providing that there had been no antecedent hepatic disease; later they became suffused, injected. The skin was hot and dry. In many cases a peculiar biting heat was felt (like the *calor mordax* of pneumonia). It produced a strange sensation, resembling a current of electricity playing over the extended head. Pulse hard and slow, varying from sixty-five to eighty. Temperature, first stage 100° to 103° where the cases proved fatal in the first stage, rising to 104°, 106° and 107°, the latter being the highest temperature noted by me in my practice. To fall slightly just before death. In the second stage or "period of calm," as it is termed, it feel, a remission only. At the beginning of its third stage, or the stage of "secondary fever," it rises again. Respiration, as one would expect during the "hot stages," is hurried. At times a peculiar moaning respiration of indescribable sadness. It fills the room and the vicinity. The respirations varied from thirty to forty per minute, and at the close of the third stage fifty to sixty, becoming less with the fall of the temperature just before death. Great thirst, noth-

ing appeases it. Restlessness, no position giving any ease. Urine, at invasion, normal but high colored. In the majority of cases on the Isthmus of Panama they died during the first stage. Such was the blood-destroying intensity of the disease when all, or nearly all of the symptoms detailed and to be detailed, appeared. They do not appear in any stated order.

Within twenty-four hours of invasion, all the symptoms are intensified. Sacral pain and headache increasing. Gastric disturbance and epigastric tenderness developing early in many cases, the slightest pressure over the stomach causing intense pain and eliciting sharp cries. In cases where the brain symptoms were very marked, in some where patients were unconscious, the slightest pressure produced a contortion of the face and body. If deep-seated pressure was made they writhed on their beds, but the instant that it was removed they become quiet again. Next, nausea and vomiting, at first a clear fluid, well named "white vomit" by Surgeon-General Blair of British Guinea, South America. Tongue at first slightly coated. I am dealing with complicated cases. In patients who had suffered from intermittents, or bilious-remittents, what is termed the characteristic tongue of yellow fever was not found. As stated, it was slightly furred. Later the fur increases from behind forwards, the tips and edges take on a deep red. Gums also become a fiery red, also the mucous membrane of the mouth and throat. The whole mucous tract suffers. Later, in the majority of cases, sore throat is complained of, due to stripping of the mucous membrane. Blood oozes from the denuded tongue and gums, giving an indescribable fetor to the breath; at times it collects on the teeth. In some cases a peculiar and characteristic odor is

exhaled from the patient's body. Once recognized, it never will be forgotten. It somewhat resembles *le odeur du cadavre*, of French authors. The late Dr. Stone, of Louisiana, was the first American writer, I believe, to recognize it. As he states, it as a very bad omen.

When patients die in the first stage, the urine always shows a large amount of albumen. The temperature remains high, 104° to 107°. Delirium, often quiet, marks the latter temperature. In some cases extending over more time—beyond the fourth or fifth day—the albumen does not appear until the close of the second or the beginning of the third stage. Albumen is a *sine qua non*. I know of no yellow fever without it, nor do any of my many friends practicing within the tropics. It never was absent in Isthmus cases. I never have seen or heard of a case of specific yellow fever without it; never either in the practice of Dr. L. Girerd, late Surgeon-in-Chief Panama Canal Company, in that of Dr. Didier of the same service, or in the cases seen by my brother, the late Dr. George W. Nelson, at one time my partner, and later Resident Surgeon at the Canal Hospitals, Huerta Galla, Panama, giving a combined experience of hundreds and hundreds of cases. During an epidemic at Colon in the fall of 1883, it swept the shipping over one hundred and fifty cases, nearly all fatal. Again albumen in all cases. Suppression of urine is a late, and generally among the last symptoms. Where it is marked, they seldom recover. The bowels, if freely acted upon by the sulphate of soda, to be referred to, may not furnish any early information, diarrhœal motions produced by the soda being followed by "black vomit motions" in many fatal cases. These motions may precede or follow black vomit. No rule is

absolute, or such material, well named, may only be seen at the autopsy. Black vomit follows the constant retchings and the "white vomit" of Blair. Black vomit is happily named, and shows innumerable fine particles or floccuh named black vomit or "coffee ground vomit," or the *marc de café* of the French writers, whose books on yellow fever are among the latest and very best. Frequently patients, without the slightest warning, commence violent vomiting. It pours forth from mouth and nostrils often threatening to choke them. I have seen a patient resting quietly on his back after the subsidence of the gnawing sacral pain, when a perfect flood of black vomit has spurted from his mouth and nostrils up into the air, over bedding, mosquito curtains and the nurse. An old and intelligent writer on yellow fever, Dr. Dowell, has been singularly happy in his remark, that it is *per saltum*. So it is.

Here, I must pause and divide my yellow fever cases into two classes, and shall state that such are met on the Isthmus of Panama. One class I took the liberty of naming "uncomplicated," the other, "complicated." By uncomplicated, I mean the disease occurring in new comers. In these, brain symptoms and delirium were common. Such almost without the classic exception died. I never knew one to recover. The possession of full health meant rich blood and better culture-fluid for the germs, that destroy it. The absolute destruction of the blood being but a matter of three or four days. I can best illustrate this by a case in the practice of my valued friend, Dr. L. Girerd, to-day a retired practitioner living in Paris. In the case referred to, on the fourth day of the disease, he failed to get a single red corpuscle in the blood—not one.

The heart was driving a fluid through the vessels—one incapable of nourishing the brain and tissues. A fluid wholly devoid of the life-sustaining oxygen carries, the red corpuscles. His crucial microscopic work revealed a fluid, and in it the debris of corpuscles; or, to use the old-time word that I have applied to this condition in yellow fever, a necremia, or death of the blood. His patient, a titled foreigner, a magnificent specimen of manhood, who stood six feet four inches in his stockings, died a few hours later. The "complicated" occurred in those who had been on the Isthmus from six months to sixteen years, and of course were profoundly malarious. I say of course, as no man, woman or child there escapes intense paludal poisoning. Sixteen years had failed to give the so-called acclimation to an American, Captain Dean. Specific yellow fever cut him off He was my patient. An elderly Italian, M. Georgetti, after thirty-seven years' residence at Panama, died of specific yellow fever. I personally know a French gentleman in Guaymas, Mexico, who has spent over forty years on both coasts of Mexico. He went through epidemic after epidemic unscathed, but in the thirty-sixth year of residence, after passing through the Guaymas epidemic of 1883, he came down with the disease in 1884, when a few cases appeared, as is usual following *all epidemics within the tropics*, and just escaped dying. He in person related his experience to me. Acclimation is only so-called; it is a myth, but quite in keeping with a lot of our gross ignorance regarding yellow fever. Nothing, absolutely nothing, protects against specific yellow fever—except having had the disease, a fact well known to all close students of the disease within the tropics.

With this digression as a preparatory statement, I shall next consider the second stage, or "period of calm," as it is termed. There is a marked fall of temperature, but merely a remission, and most deceptive and dangerous it is. I can best illustrate this by actual cases. In two cases, both mine, during the epidemic of 1880; new arrivals; just married; he a Frenchman and Consul for France; she a Portugese, aged seventeen. They had passed the first stage. His temperature had ran up to 106°, her's 105°. Then came the deceptive "period of calm." They felt so well, that despite my emphatic orders, they got up and walked about. He was in one room and she in another. In the woman's case, the secondary fever came on that night, together with a copious "vaginal hemorrhage," practically the equivalent of black vomit. She died within twelve hours of her walking about her rooms. His temperature again ran up. He died the next day. She, poor girl, was laid out in her wedding finery. They occupy a single grave in the foreign cemetery at Panama. Such, gentlemen, is malignant yellow fever as I know it.

As I have stated, yellow fever may be a disease of a single "access" or paroxysm. When it is so, the patient dies or enters on convalescence—such being the milder cases at Panama. Thus, it resolves itself into a sharp, clearly defined fever of a single paroxysm, or "access," as the French so expressively term it. As nearly all attacked died, the milder cases were the exceptions. In the great majority the "period of calm" was deceptive, the slightest imprudence on the part of the patient ending in death, later. The remission—I have seen the temperature as low as 99°, lasting from twenty-four to to thirty-six hours. In cases marked by long chills, but twenty-

four hours, to merge into the third stage of the disease, or that of "secondary fever." I have faced three epidemics of smallpox—one at home in Montreal, and two at Panama. The severe chills in that disease, initiating the severe and confluent cases—the high primary fever, the second stage, to merge into the high temperature of the secondary fever—consequent blood changes and death. These cases, so familiar to me, have caused much thinking in connection with my studies in yellow fever and its blood changes. In a fatal case of confluent smallpox, without the slightest warning, I have seen a fluid, that to the eyes, was identical with black vomit, spurt from the mouth, high in air, over everything, staining the bedding just like black vomit; it was *per saltem*. To our life-currents we must look for information.

In the "third stage" the albumen appears—that is if absent at close of "period of calm"—it is invariably met here. Black vomit, and black vomit motions, suppression of urine, brain symptoms, etc., in cases ending fatally in this stage, all the symptoms crowd each other, and death closes the scene.

In "uncomplicated" cases, or where violent delirium may be met, many painful scenes result. A young Englishman, the picture of health, as attested by his magnificent physique and rosy cheeks, was stricken on landing. He was my patient. The case closed with furious delirium. Four men had to take turn in holding him, until death closed one of the saddest of sights.

A few words regarding the "fever of acclimation" of some writers. This, mark you, is generally preceded by a slight chill, a rapid pulse, a flushed face, suffused eyes, with a trace of albumen in the urine—in a word, it is a very, very mild

form of yellow fever—the febrile movement lasting twenty-four to thirty-six hours, the mildest type of an "access." Failing a trace of albumen—it is not a fever of acclimation, that is, to a tropical physician—and the other symptoms, no subsequent protection may be expected. In fact, some profound students of the disease within the tropics, consider it but a temporary protection, that in seasons of epidemic, while such are exposed in a lesser degree, still they are liable to contract the severe type.

Such, briefly told, is yellow fever on the Isthmus of Panama. I have seen and attended it, in both cities, Colon and Panama. I wish to add that it and other tropical diseases have caused, at a low estimate, fully 20,000 deaths on the line of the Panama canal. The *New York World* of May 18, 1889, credits the French Consul at Colon with saying that 15,000 Frenchmen have died. This probably is a mistake. I believe 20,000, all told, will be a generous estimate. The heaviest dying known to me was in November, 1884; during that epidemic at Colon, in the shipping and on the Isthmus. In an article in *Harper's Weekly* of July 4, 1885, I placed the death rate for that month at 653 officers and men of the Canal Company. I obtained the figures from an inside source. The Canal Company's statements, as published in *Le Bulletin du Canal Interocéanique* were as mendacious as they were misleading.—De Lesseps' last ditch, that absurd creation of a man in his second childhood—has cost 20,000 lives; over $200,000,000 in gold; has ruined hundreds of thousands of petty investors in France. Up to the hour of the crash, De Lesseps, in person, while knowing the full truth, unblushingly told his fictions. Since 1884 he has known the whole truth. He is a

wicked old man, who should be buried alive under his fictions.

Many of our confreres have fallen on the Isthmus. Some noble fellows are buried there—yellow fever, dysentery and pernicious fever. Yellow fever must be seen and studied in its own habitats. The Isthmus is one of the earliest.

My visit to Tampa in November, 1887, impressed me in many ways, but what greatly interested me was to hear of cases of *non-albumenuric yellow fever*. These cases of so-called yellow fever, I believe furnish that class of people who have had yellow fever two and three times. As may be inferred, I have no faith in any yellow fever without the invariable presence of albumen in the urine. I have yet to meet with or read of a well authenticated case of secondary yellow fever. Nor do I know a single physician who has seen one.

Now I come to the subject of treatment; and here I most emphatically state that yellow fever has no treatment properly so called. The host of so-called treatments justify my statement. How can a disease, according to the old view, characterized by the symptoms described by me, have one? Four centuries seem to have taught the profession nothing, or next to it. All that has been known with absolute certainty is that people got yellow fever and died; the world heard of the dying, and that from Cuba it makes periodic invasions of the Sunny South. The treatment of yellow fever is purely symptomatic, my early treatment up to 1884, and was that of the "Old School." May God forgive it for its ignorance and charlatanism! Many authors have made a *rechauffe*, or rehash, of the experience of others, they never having seen a case themselves. They are responsible for much ignorance, *if not worse*. Having tried all the so-called orthodox treat-

ments, I, previous to the fall of 1884, settled on the following: On being called to see a patient at the outset, I played a trump card and made quinine a diagnostic agent. We must bear in mind that a few hours in such cases may mean a life saved or lost. The following was the mixture:

℞ Quin. Sulph., one drachm.
Acid Sulph., Dil. B. Phar., two drachms.
Soda Sulph., two ounces.
Tinct. Card Co., two drachms.
Water: Add to eight ounces. Misce fiat mistura.
Take a quarter at once and repeat in two hours.

This mixture, given French fashion, in potions, or portions, well diluted with water, made a perfect solution and was readily absorbed. It was my "multicharge gun." It gave me the best results. Hot baths. Pilocarpine in one case, aconite, etc., were in order, to produce free action of the skin. If the cases were purely malarial, the quinine and sulphate of soda met all the indications. The sulphate of soda acts like a charm, free, bilious motions following. Every dose contained fifteen grains of quinine and half an ounce of sulphate of soda. If after two doses the temperature remained high 100° and upwards, with the usual symptoms, yellow fever was the verdict. Valuable time had been saved; the bowels freely acted upon—a most important indication. Later, I added to this treatment the following: A phosphoric acid mixture every hour or two, largely diluted with water, gave it and it only, purposely to bring about an acid condition of the blood. In a few words, to make it wholly uninhabitable to the germs. I adopted this course only after serious thought, and said to a medical friend, "My next patient with yellow fever gets acid

or dies on phosphoric acid." I explained it to two friends, Dr. L. Girerd and Dr. Arthur Gore, who saw my cases; also, to Dr. Bransford, United States Navy, who crossed the Isthmus on his way to Nicaragua. Previous to my adopting this purely acid treatment, following the quinine and soda mixture, my patients kept on dying in a way that was simply appalling. Not that I lost more than my confreres. Our helplessness dazed me. As stated, after mature deliberation, I settled on phosphoric acid, well diluted, for life or death. Three cases so treated, all in succession, got well, an absolutely unheard-of thing there. I had friends see them—knowing as I do what unbelief and professional jealousy will do. My reasoning was sound. The acid did not destroy the oxygen-bearing function of the red corpuscles, while the germs of the yellow fever did, and so killed my patients. By rendering the blood acid these germs could not live and reproduce. They were destroyed *in situ* and the blood ceased to be a culture fluid. Any student of medicine familiar with bacilli and their cultures, knows full well, that even faintly acid solutions are fatal to the propagation of bacilli. Such was my reasoning as far back as 1884. I have the notes on those cases. I took full notes on all my cases, as I had been taught to do, while a student at the Montreal General Hospital, 1868-72.

The blood is the habitat of the germ of yellow fever. When my first case in the series of three demanded my attention, alas, I could not procure a reliable phosphoric acid, when I had to fall back on a formula published on page 93, United States Dispensatory, being that proposed by Mr. James T. Shinn, American Journal of Pharmacy, October, 1880, thus: "*Liquor Acidi Phosphorici.* A similar prep-

" aration under the name of Horsford's Acid Phosphate has a " large use in this country. The formula is as follows: *Liquor* " *Acidi Phosphoris* (without iron): Calcii Phosphat., 384 " grains; Magnesii Phosphat., 256 grains; Potassii Phosphat., " 192 grains; Acidi Phosphorici (80 per cent), 640 minims; " Aq. q. s. to make a pint." As stated, not being able to secure a reliable phosphoric acid, I was forced to use Horsford's Acid Phosphate. It, as I knew, was a standard preparation of uniform strength and excellence. I strongly object to employing a patent preparation, so to speak. Its contents or make up was known and it was "Hobson's choice." The preparation did all that I anticipated, and I give its formula as found in the United States Dispensatory. I knew what I used. It is essentially a strong acid mixture.

To repeat, having given my quinine and sulphate of soda mixture, thus securing free motions from the bowels. The malarial element being eliminated by the non-effect of the quinine, I then treated for yellow fever, thus: To bring about free action of the hot and burning skin was absolutely necessary. As stated at first, I tried hot baths, aconite, etc., and abandoned them, using a simpler and more effective means, in a vapor bath, named in Paris "Dr. Wilson's treatment," being that of an English physician who used it with great success during an epidemic there in 1854 and later. The patient was placed on a chair—one with a wooden seat—all clothing being removed; he was covered with blankets tucked in closely under the chin. A spirit lamp was lit and placed under the chair, thus furnishing heat and vapor. To Dr. Wilson's vapor bath I added a foot bath, all under the blankets, the water as hot as the patient could bear it. Finally

I grafted on some Jamaican treatment, giving a pint of hot lemonade or orange-leaf tea. Under this triad a profuse perspiration followed; usually within ten minutes, it fairly ran off them. As soon as it was freely established they felt better. The scarlet hue of the face faded. The hard pulse became softer. If the bath caused faintness, that was guarded against by a shorter exposure. With this I had no unpleasant symptoms, but with nitrate of pilocarpine, profound pallor and faintness in a well-nourished man, caused me alarm. I tried it in but a single case, and that was previous to my knowing of Wilson's vapor bath. The necessary exposure being made, ten to fifteen or twenty minutes, the patient stood up, the chair was slipped from below the blankets and he was lifted into bed *en masse* to prevent any escape of heat or moisture. More blankets were put over him. In some cases the perspiring lasted one or two hours, to the marked relief of the patient and the lessening of all the symptoms. After a variable time, the skin again became hot and dry, when the same procedure was repeated—as often as necessary. Thus, two highly important indications were met at the very outset. First, under the quinine and soda, free motions from the bowels were secured. Remember the marked constipation in these cases, often extending over three or four days, while the man had been eating as usual. Secondly, full and free action of its skin. According to my way of thinking and reasoning, the patient was placed under the most favorable conditions for fighting the disease. Generally large quantities of fecal matter were voided, and the pores were thoroughly opened. Next, the rest of the treatment was in order. It was of the simplest. A teaspoonful of the acid phosphate in a half

tumbler of water every hour or two, day and night for the first twenty-four hours. It never caused nausea. I continued it for two or three days, according to temperature of patient and symptoms. The bowels continued to act freely—bilious motions. Later they became very dark under the acid. Previously I had used sinapisms and a lot of things recommended by the books, and those supposed to be experienced in treating the disease. The sinapisms were placed over the stomach to try and check the distressing vomiting. At times they were beneficial; again, useless. Diet in these cases is a matter of very small importance. They are too busy with the disease. I fail to recall a single case where food of any kind was asked for. The highly irritable stomach must be remembered. Iced milk and beef broth in very small quantities at frequent intervals *if the stomach tolerates these*. Iced lemonade and pure soda water. Small pieces of ice allowed to dissolve in the mouth. I gave champagne a fair trial and abandoned it. I am satisfied that the purely acid treatment is ample. The simpler the treatment the better. The quinine and sulphate of soda mixture, vapor baths *a la* Wilson, and the acid meets all requirements. I abandoned the old time treatment. As I have already informed you, I had three recoveries, one after the other, all in infected premises where the previously attacked had died. These recoveries were in the fall of 1884. Early in the spring of 1885—March—I left for my annual holiday visiting Nicaragua, when I returned to the Isthmus, to leave it, April 25th, for New York City.

Three swallows do not make a summer, nor do I claim that three successive recoveries are everything; but as nearly all attacked died, I do earnestly claim that three successive cases

getting well furnish, food for thought. Personally, I am satisfied that by persistently acidulating the life currents, they ceased, to be blood-heat culture fluids for the germs of yellow fever. I say germs. The following facts, I believe, will strengthen my claim that three successive recoveries were absolutely unheard of at Panama. A few words regarding the dying from yellow fever thereaway. I can recall twenty-seven admissions to the yellow fever ward of the Canal Hospitals, Panama, with but a single recovery. My brother, the late Dr. George W. Nelson, then resident surgeon, furnished me with the figures. Of forty-two cases sent to the Charity Hospital, Panama, during the epidemic of 1880, when I had the disease, not a single recovery. As a concluding statement—I could amplify them to any extent—the Dingler expedition and its experience will be ample. Mr. and Mrs. Dingler, accompanied by Mr. and Miss Dingler, and a party of canal engineers, all told, a party of thirty-three, arrived at Colon in October, 1884, Mr. Dingler being the new Director General of the canal works. Within six weeks of landing Count de Cuerno and Mr. Zimmerman were dead—specific yellow fever. Within fifteen months of the landing of that party of thirty-three, fourteen had had yellow fever and but one recovered—Mr. Dingler losing wife, son and daughter—he was my patient and had been on the Isthmus previously. His regular life no doubt was the factor that saved him. Contrast three successive recoveries with the above—my cases were specific yellow fever.

As previously intimated, yellow fever spares none. While it is quite true that total abstainers have been swept away by it, it is equally true that even in the severest cases, they have recovered, where the moderate drinker was lost from the start.

Time and again my own experience has confirmed this. The regular life, particularly within the tropics, is its own reward. In Ziemmsen's Encyclopedia, Vol. II, in the article on yellow fever, much valuable information will be found on this very subject the value of total abstinence—"Panama in 1855"—Harper Bros., New York. "The Hand Book of the Panama Railway," 1850—Harper Bros. Dr. L. Girerd's Work on Panama, published in 1883, in French, in Paris, all contain much information regarding that land of pestilence and death, as well as "Five Years in Panama," 1859—Belford, Clarke & Co., New York.

In reference to the inestimable benefits of total abstinence within the tropics, it simply confirms the opinion of a valued friend at Panama. The Consul-General of the United States, who, when asked, "How do you live in the tropics?" wittily replied "It all depends on the *liver*." So it does. An alcoholic liver in yellow fever means death.

The time allowed for the reading of this paper necessitates my leaving out much that I should like to discuss. I must ignore the interesting history of the disease and hasten on.

A few words or points on the after-treatment. The treatment during convalescence calls for constant watchfulness. It is here that malarial symptoms crop up in the cases of those who had been at Panama a few months. Dr. L. Girerd examined the blood of hundreds on arrival, and found it normal, in no case showing the malarial bacillus. After the first month he re-examined scores of them; the blood of all showed it, simply confirming the statements to be found in Dr. Tomes' work—"Panama in 1855"—statements amplified in Dr. L. Girerd's work.

To return to the stage of convalescence, I have known a beefsteak to cause death on the tenth day. During convalescence such patients were simply ravenous. Well do I recall my own intense hunger. Slops are in order—fluid food—given at short intervals, not to overload the stomach. Its irritability lasts for weeks and weeks. Bathing, a thorough washing of the patient's body and hair daily, in a weak carbolic bath, the thorough disinfection of the patient's effects and room.

The majority of cases were fatal on or before the fifth day, closing with black vomit, suppression of urine, etc. In such patients it was a fever of a single "access," or paroxysm. Other cases passed through the "period of calm" and died in the third stage, or that of "secondary fever;" from the sixth to the ninth day. Cases of a typhoid character were rare. I saw but one, being that of my friend Dr. Arthur Gore, now in San Francisco, California.

The sequelæ: Boils, pimples, parotid swellings, and intermittent fever, jaundice. I was of a rich canary color. It lasted a whole month. People were never curious about it or anxious to ask me questions—not any.

Now, for a very brief reference to *post mortem* appearances. My small experience under this heading simply confirms what an old and clear-headed American writer has stated: "Yellow fever has no pathology." I refer to Dr. Grenville Dowell, whose little *brochure* contains a mine of information, or what the Great French Undertaker, M. de Lesseps, calls "an arsenal of facts."

The *post mortem* findings are so variable in patients cut off by the same symptoms, that no reliance can be placed upon

them. I deem it a blood disease pure and simple, and if my view is accepted, absence of any marked pathological changes, save in the blood itself, cannot be expected.

The liver: It presents a variety of conditions. I have found it fatty; again, fatty on section showing an immense quantity of oil globules; again, perfectly normal in size and color. The chamois-colored liver is supposed to be the characteristic liver. I never saw but one; and it was the only one found in nearly one hundred autopsies made at the Canal Hospitals, Panama, by Dr. S. Didier, a gentleman profoundly versed in yellow fever. He was born in one of its habitats, the island of Martinique, French West Indies.

The kidneys: Nothing constant. I met them large and small; again, perfectly normal to the eye.

The stomach: This organ presented signs of acute inflammation. Generally its coats were thickened; it contained more or less black vomit; I saw nearly a pint in one case; its inner surface showing innumerable pink points or *foci* of congestion, and small deposits of blood. Dr. Castellanos, a physician to the Charity Hospital, Panama, a Spaniard, and formerly an hospital surgeon in Cuba, told me that it was the only constant condition found by him, and he while there in Cuba had made nearly one hundred and fifty autopsies.

The brain I never examined. Dr. L. Didier found nothing worthy of remark in his large experience. Nothing.

The blood: I always found it in a perfectly fluid condition. Remember the destruction of the corpuscles and the great amount of albumen eliminated by the kidneys. Its specific gravity taken by me two hours after death, was nearly normal. To this fluid we must direct our whole attention.

To repeat, I deem it a blood disease, pure and simple, and have held this view since 1884. Death in these cases is due to a true necremia. If this view, which I believe is peculiar to myself, be proven, we have an explanation of the majority of symptoms of yellow fever, and as already stated, explains the absence of any characteristic pathological changes.

The brain symptoms are due purely and simply to the destruction of our oxygen carriers, the red corpuscles. The great Virchow attributes loss of consciousness to their failure to carry oxygen. By rendering the blood uninhabitable to germs that prey upon and destroy the corpuscles, we triumph. Much remains to be explained about yellow fever. Many honest and patient toilers are at work on this great problem. I believe that with the discovery of the specific germ by Dr. Domingo Freire, of Rio de Janeiro, Brazil, by Dr. L. Girerd, at Panama, and its discovery by Dr. Carlos Findlay in Havana—to his and the work of his friend, Dr. Delgado of that city—add to this, our knowledge of the truly wonderful strides made by these gentlemen in their bacteriological studies and inoculations—to the above, by acidulating the blood, as I have done, where it has invaded the system—with such factors, the future seems full of hope to me. May it prove so. Having digressed, I must get back to the *post mortem* findings.

The bladder: Generally a few drachms of highly albuminous urine were found. Remember the suppression.

Black vomit has a peculiar odor, and is slightly acid to the taste. To clear up a vexed point in my mind, I collected some in one of my cases and tasted of it. It required a little courage, but I was in earnest and working for results. I may state

inter alia that it will never compete favorably with other beverages. The "vomit," on settling deposits coffee ground "particles," the fluid above being the color of weak black tea. Black vomit is not bilious vomit. I tasted it to clear up this very point. Black vomit as a symptom is of grave import. It indicates advanced blood changes—the beginning of the necremia. While at Panama I sent friends specimens of my late patients. My rooms were miniature grave yards. Some "black vomit" sent to my old classmate, Dr. William Osler, then Professor of Clinical Medicine in the University of Pennsylvania, with other material furnished *pabulum* for a lecture on Vomited Matters. To-day he is Professor of Practice of Medicine in the Johns Hopkins University, Baltimore, Md., and Physician-in-Chief to magnificent hospital of the same name.

To recapitulate: Now that Drs. Freire, Girard, Findlay and Delgado have found the same germ, Dr. Domingo Freire being the first investigator, and its discoverer, to him the honor and credit are due. He caused others to work. Now that this has been accomplished, I firmly believe a new era is at hand, and that soon, this constant reproach to our profession, and much vaunted modern civilization, the sway of yellow fever, is about to receive its *coup de grace*. Inoculations will protect man against this awful disease as vaccine does against smallpox. Dr. L. Girard proved his good faith in such a vaccine, if the term is permissible, by making attenuated cultures of the microbes of specific yellow fever; and by inoculating himself and without carrying it to the full protective influence, he allowed himself to be bitten by mosquitoes (Dr. Carlos Finlay's discovery) that had been feeding on a man in the yellow fever ward of the Canal Hospital, a case of specific

yellow fever, the fifth day, the mosquitoes were disturbed and allowed to bite him. The result was a mild yellow fever. I translated his report, and it was published in the *Canada Medical Record*, Montreal, in the fall of 1886, together with an editorial.

With inoculations to protect and prevent, and the purely acid treatment where the germs have invaded the system—with these and a strictly scientific quarantine, *a la* Dr. Joseph Holt, our profession can save the lives of hundreds of thousands in the future who but for such measures would die like rotten sheep. The acid, I believe, is a germicide in these cases. I like the term and make no apology for using it. Intermittent fever, as we well know, thanks to the crucial work of Leveran, Girerd and Osler, has its *bacillus malariæ* ; quinine is its germicide.

When these things are thoroughly understood and put in practice, travel within the tropics will be divested of its terrors. People ere visiting them for business or pleasure will be inoculated, and with quarantines, *a la* Dr. Joseph Holt, the commerce of nations will be almost free and untrammeled.

Here, gentlemen, I must say farewell. I have to thank you for your kind attention and patience. In the near future I trust that you will recall these statements made in the presence of the members of the State Medical Society of Arkansas, on this, the 28th of May, 1889.

Articles extensively quoted in preceding, from authors's papers, as under :

Yellow fever considered ; its relation to the State of California : Ninth Biennial Report of the State Board of Health, California, 1886 ; Sacramento.

Cuba in its relation to the Southern United States: its danger as a disease-producing and distributing centre: Tenth Biennial Report of the State Board of Health, California, 1888; Sacramento.

The present tendency to epidemics: Tenth Biennial Report State Board of Health, California, 1888; Sacramento.

The Isthmus of Panama considered as a disease-producing and distributing centre: Tenth Biennial Report of the State Board of Health, California, 1888; Sacramento.

The Holt system of maritime sanitation, or an ideal quarantine: Tenth Biennial Report of the State Board of Health, California, 1888; Sacramento.

ADDENDA.

YELLOW FEVER ARTICLES.

[From the Pine Bluff Daily Commercial, May 31, 1889.]

Dr. Wolfred Nelson, a Member of the College of Physicians and Surgeons, Province of Quebec, Canada, late State Board of Health, Panama, South America, read a paper Tuesday before the State Medical Society of Arkansas. The subject was "Yellow Fever." An experience extending over many years on the Isthmus of Panama, the west coast of Mexico, Cuba, and his observations during the epidemic at Tampa, Fla., were brought out. Following his visit to Tampa, in November, 1887, he, in a letter published November 30, in the *Times-Union*, of Jacksonville, forecast the Florida epidemic of 1888. The subject of yellow fever was handled in all its bearings, lengthy and special mention being made of the years of elaborate work of Dr. Domingo Freire, of Rio de Janerio, who was the first scientist to recognize and cultivate the germ of yellow fever and who used attenuated cultures as vaccine is used, in other words a prophylactic against the disease, the inoculations giving the same immunity against yellow fever that vaccine does against smallpox. Next he took up the work of his friend, Dr. L. Girerd, late Surgeon in Chief, Panama Canal, dwelling on his faithful observations and his sublime faith in it, by inoculating himself with a culture, and his having a mild form of yellow fever, a case published in the *Canada Medical Record*, Montreal, in the fall of 1886, and subsequent immunity

in that historic land of pestilence and death, the Isthmus of Panama. Finally he dwelt on the work of Dr. Carlos Findlay, of Havana, a gentleman who took up the investigation of germs very soon after Dr. Domingos Freire, also Dr. Delgado's work, he being a co-laborer with Dr. Findlay. Dr. Nelson being familiar with their work and cultures. The work of these gentlemen, while conducted in various localities, many, many thousand miles apart, was confirmatory. It is the same micrococcus or germ first named by Dr. Domingos Freire, the *micrococcus xanthogenicus*, by Dr. Findlay, the *micrococcus tetragenus flavus*. Dr. Domingos Freire, has inoculated thousands in Brazil. Dr. Findlay has made a number of inoculations, but it remained for Dr. L. Girard, to-day a retired practitioner, resident in Paris, to inoculate himself, and that at that time 1883, when but very little was known of the risk that he might have incurred. Dr. Wolfred Nelson boldly forecast a day when people will be inoculated as a protection against yellow fever as they are to-day from smallpox. With this measure and the purely acid treatment where the disease has invaded the system, he predicts a revolution in yellow fever, a specific fever, that for four hundred years has bade the profession defiance and of which the only certain knowledge to doctors was, that their patients died, while they were helpless to assist.

The purely acid treatment, introduced by Dr. Nelson at Panama, is of the simplest and was introduced by him in 1884. It is based upon a fact known to bacteriologists, that even in faintly acid solutions bacteria or germs fail to propagate. Using this as a scientific basis, he gave acid and claims that he acidulated the blood, rendering it absolutely uninhabitable to the germs. He styles it a blood disease, pure and simple.

The germs destroy the red corpuscles or our oxygen carriers; hence, death of the blood or necremia and the entire absence of marked pathological changes, save the absolute destruction of the blood in fatal cases. This acidulating of the blood, while it renders it uninhabitable to the germs, in no wise affects its life-sustaining functions. This purely acid treatment and reasoning as to its action, he distinctly claims as his discovery, or the application in practice of what we know takes place in the laboratory. For a flood of light on germ diseases we are indebted to the great Pasteur. Death in yellow fever, Dr. Nelson claims, is due purely and simply to the destruction of the red corpuscles, as on these microscopic bodies our life and health depend. In concluding, the reader of the paper claimed that with inoculations to prevent, and the purely acid treatment, where it has invaded the system, a new era will be brought about in handling this old-time enemy of mankind. These *quo ad* scientific quarantines, *a la* Dr. Joseph Holt, and it will be fully initiated. Then, and then only, will travel within the tropics be divested of its terrors and the commerce of nations become almost untrammeled.

Referring to Panama—he drew attention to "Panama in 1855," Dr. Otis' Handbook of the Panama Railway, 1860, Harper Bros., New York; Dr. Girerd's work, published in Paris in 1883, and "Five Years at Panama," 1889, Belford Clarke & Co., New York—he claimed that the very dogs suffer from intense paludal poisoning, as referred to by Dr. Tomes, in "Panama in 1855," and the cattle also suffer, a fact fully attested by the huge spleens found in them.

The dying along the line of DeLessep's *last ditch*, he placed at from 15,000 to 20,000 as a minimum, and told our reporter

that during the month of November, 1884, the canal company buried 653 officers and men; that during one day in that month nineteen corpses left the Panama Canal Hospitals, where his brother, the late Dr. George W. Nelson, was Resident Medical Officer, in 1883 and part of 1884. The Panama Canal he pronounces absolutely impracticable; that for many years past it has been nothing but a stupendous fraud. De-Lesseps has known since 1884 that it was impracticable, yet he persisted in deluding the French.

A PROGNOSIS.

After Dr. Wolfred Nelson had read his paper on Yellow Fever, on Tuesday afternoon, at the meeting of the State Medical Society, Dr. Z. Orto, the newly elected President of the Society, asked Dr. Nelson to give the meeting his views anent the outlook for this season. Dr. Nelson, in reply, discussed the general question, and said that the epidemic in Jacksonville was supposed to be due to a man named McCormick, who got into a sleeper at Tampa, about the end of July, 1888. There was yellow fever in Plant City at the time, and a *cordon* surrounded it, but McCormick had forced his way in. He was sick on the sleeper and went to a hotel in Jacksonville. Later a physician was called in; he deemed the case suspicious and sent for Dr. Neill Mitchell, President of the Jacksonville Board of Health. Dr. J. Y. Porter, United States Army, of Key West, who nobly volunteered for the Tampa epidemic, and later for the Jacksonville epidemic, was visiting Dr. Neill Mitchell. He saw McCormick as well, and the case was pronounced yellow fever. [Dr. Nelson was in Jacksonville August 4, 1888, on his way to New York from Cuba.] Now, to return to Dr. Orto's question. He said that if the whole city, *i. e.*,

all infected houses had been scientifically disinfected in Jacksonville, there might be little danger, but he greatly feared that such had not been the case. He referred to Fernandina and other localities, and reiterated what is well known, that after the Government ceased to pay for the infected bedding that was destroyed, its destruction ceased. He felt confident that many *foci* of the disease had been established, and all such unquestionably were sources of great danger. He dwelt on the activity of the germs of yellow fever, their power of lying quiescent for long intervals, then to take on new and death-dealing powers when the favorable conditions are presented.

He dwelt at great length on the great danger of Cuba to the Southern United States, and emphasized his remarks by stating that the late Florida epidemic was an outcome, pure and simple, of rapid transit, Spanish disregard of yellow fever and want of scientific quarantine in Florida. The magnificent quarantine system of Dr. Joseph Holt should be found in every port doing business with Cuba, Colon and Panama.

Panama, where he had lived and practiced for years, was a mere hot-bed of the disease; so is Colon and so is Cuba, perpetual hot-beds and distributers of the disease.

He also gave a minute account of a voyage from Havana to New Orleans in 1887. He left Havana in May, 1887; a band of filthy humanity embarked—a lot of Turks. He noted their careful inspection by Dr. D. M. Burgess, late United States Army, to-day the Inspector of the Marine Hospital Service in Havana. They left there seemingly in perfect health; one by one—men, women and children—Dr. Burgess examined them. At Key West Dr. Nelson saw Dr. J. Y. Porter, pointed out the mass of filthy humanity, and dwelt on the dangers

thereof. They were not for Key West, and if they had been the State quarantine was not in force. The landing of many packages of fruit in baskets, covered with coarse matting he noticed and told the Society of the danger of such *fomites*. At Tampa, where the Turks disembarked, all seemingly in good health, he sent a letter to Dr. John Wall, a well known writer on yellow fever, who has faced several epidemics, giving him full information regarding the Turks. Subsequently he learned that this letter did not reach Dr. Wall (it had been sent by private hands) until three days later, when he also received a letter from Dr. D. M. Burgess, stating that one of that same band of Turkish peddlers, while they were living in the very slums of Havana, had died of yellow fever.

Even if Dr. Wall had received his letter in time, he would have had no power, as the State quarantine laws were not in force. On reaching New Orleans Dr. Nelson, at the time a correspondent of the Board of Health of Louisiana, gave the whole information to Dr. Joseph Holt, the President of that Board, and to whom this country in particular and the world at large is indebted for the ideal quarantine known to all sanitarians as the "Holt System of Maritime Sanitation." Dr. Holt promptly notified the Governor of Florida. The Turks were traced and passed on with a rapidity that was electric-like. They did not get away until there had been a death among them in Plant City, almost a suburb of Tampa, of the specific yellow fever, some time, I believe, in July. This fact is indisputable.

Dr. Nelson took up the epidemic of Key West during the summer of 1887. While there, *en route* to Cuba, he had traced it to the landing of a lot of infected bedding from the

city of Havana. Its owner, a woman, had kept a boarding-house in Havana, and removed to Key West, where she again engaged in the same business. It was the old, old story, familiar to all students of Yellow Jack *fomites* or infected material. A boarder who had slept on one of her beds had sickened and died. One case, as we know, is ample. There was an explosion of the disease and an epidemic. He also described how the terror-stricken people fled to the mainland. Next, he took up the Tampa epidemic, late in the summer and fall of 1887, which was said to be due to a smuggling vessel. *Remember the Turks and that death in Plant City in July, 1887.*

To rapid transit and want of care on the part of the authorities of Florida the late epidemics are due. Under the circumstances described yellow fever is a perfectly natural sequence or result. His forecasts were thus all verified, and with the results we, alas, are only too familiar.

The persistent and wilful ignoring of quarantine measures in Cuba by the Spanish authorities he referred to, adding that while Spain cared little for her neighbors, *she did quarantine against Cuba*, her action being an exemplification of the difference between mine and thine. Cuba is a hot-bed of the disease, and has been for over one hundred years. It is endemic always, and annually epidemic in Havana in August and September. He classed it with Panama, where the dead are unburied, causing new epidemics of small-pox and yellow fever. Small-pox is always present in Cuba and all Spanish America. These matters he has treated of at length in the Ninth Biennial Report of the State Board of Health of California, in 1886, and again in four articles in 1888.

The Government of this vast republic and the Press must act,

and if they fail to educate such nations as Spain and Colombia up to the requirements of common decency and sanitation, then cut off all commercial relations. The latter, he believes, will be the sole manner of effecting it. Failing, the precautions now so well known to all students of yellow fever and sanitation, the Sunny South will remain exposed and will be swept in the future as in the past. The epidemic of 1878 cost the South 22,000 lives, and damages amounting to hundreds of millions.

To-day, as we all know, the South is prosperous to a degree, a flood-tide of production and prosperity, millions of dollars being invested, not only of American, but of foreign capital, in her manufactures. Let an epidemic like that of 1878 sweep over her, and she will receive a blow that twenty-five years will not make good. Knowing these things so well, shall the South be constantly endangered by Cuba and Panama? If the present conditions continue, yellow fever will be permanently domiciled in South Florida, then good-bye to Southern prosperity. Yellow Jack will be triumphant, reasserting a sway extending back over four centuries. Yellow fever to-day is as great a reproach as small-pox. God grant that those in power may awake to their responsibilities, and that yellow fever may cease to be a reproach to the Greatest Republic that the world has known.

BY THE SAME AUTHOR.

APERCU

DE

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